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014/024

REMARKS

In view of the foregoing amendments and the following remarks, the applicants respectfully submit that the pending claims comply with 35 U.S.C. § 101 and are not rendered obvious under 35 U.S.C. § 103. Accordingly, it is believed that this application is in condition for allowance. If, however, the Examiner believes that there are any unresolved issues, or believes that some or all of the claims are not in condition for allowance, the applicants respectfully request that the Examiner contact the undersigned to schedule a telephone Examiner Interview before any further actions on the merits.

The applicants will now address each of the issues raised in the outstanding Office Action.

Objection

The title was objected to as not being descriptive. The applicants respectfully request that the Examiner reconsider and withdraw this objection in view of the amended title, which is indicative of the invention to which the claims are directed.

Rejections under 35 U.S.C. § 101

Claims 14-24 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. The applicants respectfully request that the Examiner

reconsider and withdraw this ground of rejection in view of the following.

First, since claims 15, 18 and 20-23 have been canceled, this ground of rejection is rendered moot with respect to these claims.

The Examiner contends that claim 14 recites a data structure that is not tangibly embodied in a storage medium so as to be executable by a computer or processor. (See Paper No. 20070306, page 2.) Claim 14, as amended, recites a machine-readable storage device storing a machine-readable message. Accordingly, the claim is directed to a machine-readable storage device storing a machine-readable message. The applicants respectfully note that the data structure need not be **executable** by a computer or a processor. Indeed, Guidelines of the US Patent Office state:

a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory

"Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility," OG Notices, (November 22, 2005).

Further, claim 14, as amended, more clearly recites the functional utility of the data structure. Specifically, claim 14, as amended, recites in pertinent part:

the label included in the first field is to be used by a forwarding device, receiving the message, for forwarding data only if the data forwarding device has a routing table entry that matches at least one of (A) the forwarding equivalency class information included in the second field, and (B) the host address or the host prefix included in the third field.

Thus, claim 14, as amended, recites functional descriptive material stored on a machine-readable storage device. (Note that the exemplary storage devices described in paragraph [0061] of the specification of the present application are all computer-readable.)

The applicants respectfully submit that claims 14, 16, 17, 19 and 24 recite statutory subject matter in view of the foregoing. Consequently, the applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection.

Rejections under 35 U.S.C. § 103

Claims 1-37 stand rejected under U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,965,592 ("the Tinsley patent") in view of U.S. Patent No. 6,879,594 ("the Lee patent"). The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Independent claims 1 and 25 are not anticipated by the Tinsley and Lee patents because these patents, either taken alone or in combination, fail to teach or suggest acts of (or means for) determining whether or not a message includes extended information, if the message

does not include extended information, determining, using a first part of the message and routing information, whether or not to generate a further message to signal the label-switched path, and *if the message does include extended information, determining, using a second part of the message and routing information, whether or not to generate a further message to signal the label-switched path.* Further, one skilled in the art would not have been motivated to combine the Tinsley and Lee patents as proposed by the Examiner.

Each of these issues is addressed below. First, however, the Tinsley and Lee patents are introduced.

The Tinsley Patent

The Tinsley patent describes distributing SS7 functions, previously performed centrally, using distributed gateway routing elements (DGREs). Figure 8 illustrates routing (that is, forwarding) an outgoing SS7 message by a DGRE. Figure 9 illustrates processing a received SS7 message. In both cases, a virtual interprocessor message transport (IMT) bus is used to communicate messages between DGREs. MPLS is described on columns 6 and 7 as a way of ensuring quality of service ("QoS") for communications between the DGREs. Thus, MPLS is described as one way of providing a virtual IMT bus with an appropriate QoS.

Note that the Tinsley patent does not concern *establishing* a label-switched path (LSP). Although MPLS can provide a label-switch path, the Tinsley patent is concerned with communications that might be facilitated by *previously established* MPLS-based label-switched paths. Further, although SS7 concerns call setup, call

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teardown and database access features, it does not concern establishing a **label-switched path**.

Referring to Figure 6(A), the Examiner is apparently interpreting the IP header 602 as the claimed "first part of a message" and the MPLS header 604 as the claimed "second part of a message". However, the packet 600 is for carrying data to be communicated (via the virtual IMT bus) among distributed SS7 DGRES. The IP header 602 and MPLS header 604 are simply used to forward the packets, preferably with an appropriate quality of service (QoS).

The Lee Patent

The Lee patent describes avoiding the formation of loops when setting up label-switched paths by using splice request and acknowledge messages. Although the Lee patent concerns establishing a label-switched path, it does not determine, using a first or second part of a message (depending on whether or not the message includes extended information) and routing information, whether or nor to generate a further message to signal the label-switched path.

As can be appreciated from the foregoing, the Tinsley and Lee patents neither teach, nor suggest, the acts or means recited in independent claims 1 and 25. Thus, the claims are not rendered obvious by the Tinsley and Lee patents for at least this reason. Since claims 2-13 and 26-37 depend, either directly or indirectly, from claims 1 and 25, respectively, these claims are similarly not rendered obvious by the Tinsley and Lee patents.

Further, one skilled in the art would not have been motivated to combine these patents as proposed by the Examiner. The Examiner concedes that the Tinsley patent does not teach determining whether or not to generate a further message to signal the label-switched path. (See Paper No. 20070306, page 3.) This is naturally the case since the Tinsley patent discusses using **previously established** MPLS paths, with quality of service (QoS) guarantees, thereby defining a virtual IMT bus to enable communications between distributed DGREs. (See, e.g., column 5, lines 14-25 and column 6, lines 56-59.) In the Tinsley patent, the IP header 602 and MPLS header 604 are part of a packet 600 used for SS7 call signaling over an existing label-switched path. It 600 is not used for establishing a label-switched path.

Since the Lee patent concerns avoiding generating loops when establishing a label switched path, one skilled in the art would not have been motivated to modify an aspect of the Tinsley patent that occurs after a label-switched path already exists in view of the Lee patent. Assuming, arguendo, that the teachings of the Lee patent could be applied during the establishment of the label-switched paths used by the Tinsley patent to communicate packets 600 among DGREs, such a combination would differ from the claimed invention since one of two different parts of a message would not be used to determine whether or not to generate a further message to signal a label-switched path.

Thus, independent claims 1 and 25 are not rendered obvious by the Tinsley and Lee patents for at least this additional reason. Since claims 2-13 and 26-37 depend, either directly or indirectly, from claims 1 and 25,

respectively, these claims are similarly not rendered obvious by the Tinsley and Lee patents.

Finally, independent claim 14, as amended, is not rendered obvious by the Tinsley and Lee patents because these patents neither teach, nor suggest, a first field including a label, a second field including forwarding equivalency class information, and a third field including label-switched path signaling resolution information, the label-switched path signaling resolution information including one of a host address and a host prefix, wherein the label included in the first field is to be used by a forwarding device, receiving the message, for forwarding data only if the data forwarding device has a routing table entry that matches at least one of (A) the forwarding equivalency class information included in the second field, and (B) the host address or the host prefix included in the third field.

The Examiner applied the Tinsley patent to claim 14. Although the IP packet 600 of Figure 6A of the Tinsley patent includes a label 610, it does not include a second field including forwarding equivalency class information, and a third field including label-switched path signaling resolution information, the label-switched path signaling resolution information including one of a host address and a host prefix, wherein the label included in the first field is to be used by a forwarding device, receiving the message, for forwarding data only if the data forwarding device has a routing table entry that matches at least one of (A) the forwarding equivalency class information included in the second field, and (B) the host address or the host prefix included in the third field.

Thus, independent claim 14, as amended, is not rendered obvious by the Tinsley and Lee patents for at least the foregoing reason. Since claims 16, 19 and 24 depend from claim 14, and since claim 17 depends from claim 16, these claims are similarly not rendered obvious by the Tinsley and Lee patents.

As least some embodiments consistent with the present invention advantageously permit LDP-signaled LSPs without requiring information about remote ASs (e.g., FEC element prefixes or host addresses that are external to the IGP) to be injected into the local IGP. As stated in the specification:

RFC 3036 describes label mapping message procedures in § 3.5.7.1. In particular, this section specifies that an LSR receiving a label mapping message from a downstream LSR for a Prefix or Host Address FEC Element should not use the label for forwarding unless its routing table contains an entry that exactly matches the FEC element. This may be provided to ensure that the LDP LSP will follow the shortest path calculated by a routing protocol, and to ensure that there will be no routing loops. This requirement is not a problem when the LSP is within a single network domain (or a single autonomous system (AS)), such as the case illustrated in Figure 4 in which an LSP is provided between provider edge devices (PE) 420, 430 in a network domain 410, to provide virtual private network (VPN) services to customer edge devices (CE) 425, 435 for example.

However, consider a case as illustrated in Figure 5 in which an LSP is included in more than one AS 510, 520, 530. This situation may arise either in a

multi-provider scenario, or in the case where a single provider has several ASs. LDP and a border gateway protocol (BGP) could be used to signal labels. However, routing information known by nodes in AS 510 might not include information about nodes in AS 520 or AS 530. The routing information could be updated to include information about nodes in other ASs (e.g., routes for LDP FECs could be injected into an IGP), but this may be undesirable. For example, in a multi-AS topology, a service provider ("SP") may not want to advertise a PE's addresses into the local IGP. Rather than using LDP and BGP, a resource reservation protocol (RSVP) could be used end-to-end. However, end-to-end RSVP is not standard and is not as scalable. Further, many network service providers are already running LDP in their networks. Another alternative solution is to use end-to-end BGP. However, this requires a three-label stack (e.g., 500:900:PE1 and some customer hardware does not support three label stacks.

In view of the foregoing, it may be desirable to allow LDP-signaled LSPs without requiring information about remote ASs (e.g., FEC element prefixes or host addresses that are external to the IGP) to be injected into the local IGP. [Emphasis added.]

Paragraphs [0016]-[0018]. Dependent claims 8-10 and 32-34 more clearly recite this aspect of the invention. There is nothing in the Tinsley and Lee patents that contemplate this.

New claims

New claims 38 and 39 depend from claims 1 and 25, respectively, and further recite that the second part of

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the message includes at least one of a host address and a host prefix corresponding to a node within a local network domain. This feature is supported, for example, by Figure 11 and paragraphs [0064]-[0069] of the present application. This feature further distinguishes the claimed invention over the cited art.

New claims 40 and 42 depend from claims 1 and 25, respectively, and further recite an act of (or means for) generating, if it is determined to generate a further message to signal the label-switched path, a label mapping message. Similarly, new claims 41 and 43 depend from claims 1 and 25, respectively, and further recite acts of (or means for) generating, if it is determined to generate a further message to signal the label-switched path, a label mapping message including an outgoing label, and creating a forwarding state binding between the outgoing label and a label in the message. These claims are supported, for example, by paragraph [0049] of the claimed invention. These features further distinguish the claimed invention over the cited art.

Conclusion

In view of the foregoing amendments and remarks, the applicants respectfully submit that the pending claims are in condition for allowance. Accordingly, the applicants request that the Examiner pass this application to issue.

Any arguments made in this amendment pertain **only** to the specific aspects of the invention **claimed**. Any claim amendments or cancellations, and any arguments, are made **without prejudice to, or disclaimer of**, the applicants'

right to seek patent protection of any unclaimed (e.g., narrower, broader, different) subject matter, such as by way of a continuation or divisional patent application for example.

Respectfully submitted,

June 21, 2007

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